



**Installation and Maintenance Manual  
CbN Series 3000  
Gearmotors and Reducers**

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**FORM**  
**8772E**  
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**⚠ WARNING**

- Read and follow all instructions carefully.
- Disconnect and lock-out power before installation and maintenance. Working on or near energized equipment can result in severe injury or death.
- Do not operate equipment without guards in place. Exposed equipment can result in severe injury or death.

**⚠ CAUTION**

- Periodic inspections should be performed. Failure to perform proper maintenance can result in premature product failure and personal injury.

**Safety First**

High voltage and rotating parts can cause serious or fatal injury. Safe installation, operation and maintenance must be performed by qualified personnel. Familiarization with and adherence to NEMA MG2, the National Electric Code and local codes is recommended. It is important to observe safety precautions to protect personnel from possible injury. Personnel should be instructed to:

1. Avoid contact with energized circuits or rotating parts.
2. Disconnect all power sources before initiating any maintenance or repair.
3. Act with care in accordance with prescribed procedures in handling and lifting this equipment.
4. Be sure the unit is electrically grounded in accordance with code requirements.
5. Be sure equipment is properly enclosed to prevent access by children or other unauthorized personnel in order to prevent possible accidents.
6. Be sure shaft key is fully captive before unit is energized.
7. Avoid contact with capacitors until safe discharge procedures have been completed.
8. Most units are shipped with oil. Always be sure oil lubricated units are filled with correct oil to proper level before operating.
9. Provide proper safeguards for personnel against rotating parts and applications involving high inertia loads, which can cause overspeed.
10. Avoid extended exposure to equipment with high noise levels.
11. Be familiar with the equipment and read all instructions thoroughly before installing or working on equipment.

**Installation Instructions**

**Start-Up**

Before operating the reducer or gearmotor, the following must be done:

- Install the drive on a rigid and vibration-free surface.
- Remove the protective coating on the shaft and flange. Use solvent if necessary.
- Carefully install coupling, sheaves, sprockets, or pinions on shaft. Mount as close to the shaft shoulder as possible.
- It is preferable to use heat instead of force. **Do not hammer on shaft!**
- Check shaft alignment when using direct coupling.
- Check shaft parallelism when using belt or chain drive.

**CAUTION:** Refer to belt manufacturer's recommendation for belt tension. (Tension should not be applied on chain drives.)

- Check oil level in oil lubricated reducer.
- Install breather plug in the plug hole per recommendations shown on page (5, 7, or 9) for sizes larger than frame 30.

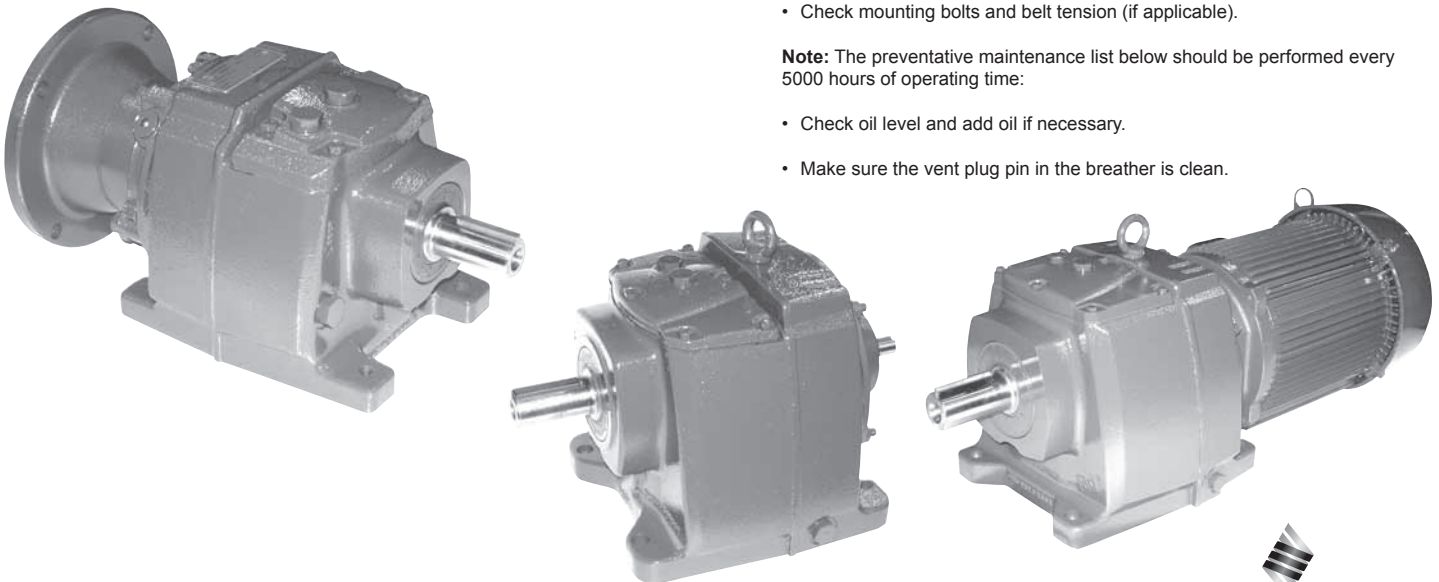
**Maintenance**

Safe operation and product performance is improved with periodic inspections. It is recommended the reducer or gearmotor be inspected every 50 hours of operating time.

- Check mounting bolts and belt tension (if applicable).

**Note:** The preventative maintenance list below should be performed every 5000 hours of operating time:

- Check oil level and add oil if necessary.
- Make sure the vent plug pin in the breather is clean.





## Lubrication

Series 3000 CbN gearing is shipped with one of the following synthetic lubricants per the table below and fitted with a magnetic drain. Each reducer is filled according to the mounting position specified when ordered. Refer to the unit nameplate and the chart to the right for the mounting position arrangement for your unit.

In the case of synthetic oil, the lubricant does not require changing, but it is recommended that proper oil level be checked periodically.

### Standard Synthetic Gear Oil (Non-Food Grade)

#### No Backstop

Manufacturer	-25° F to 125° F (-30° C to 50° C)
Fuchs *	Sintogear 125
Mobil *	Mobilgear SHC 150
Shell *	Omala Fluids HD 150

#### With Backstop (1)

Manufacturer	-25° F to 125° F (-30° C to 50° C)
Shell *	Omala RL 100
Mobil *	SHC 629

### Standard Synthetic Gear Oil (H1 Rated Food Grade Requirements)

#### No Backstop

Manufacturer	22° F to 125° F (-20° C to 50° C)
Mobil *	SHC Cibus 150

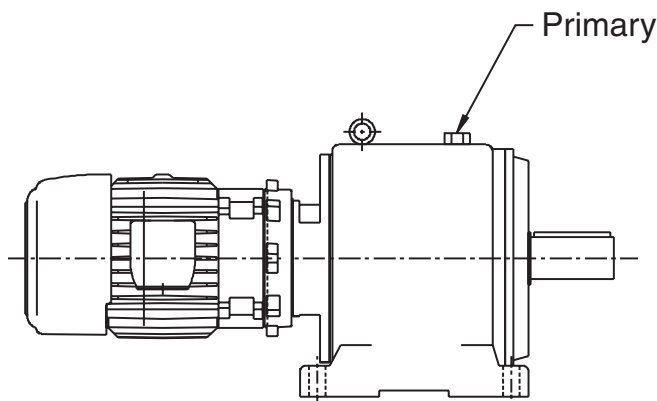
#### CAUTION!

- Never mix synthetic oil and mineral oil.
- Never use extreme pressure (EP) oil in a reducer with a backstop.

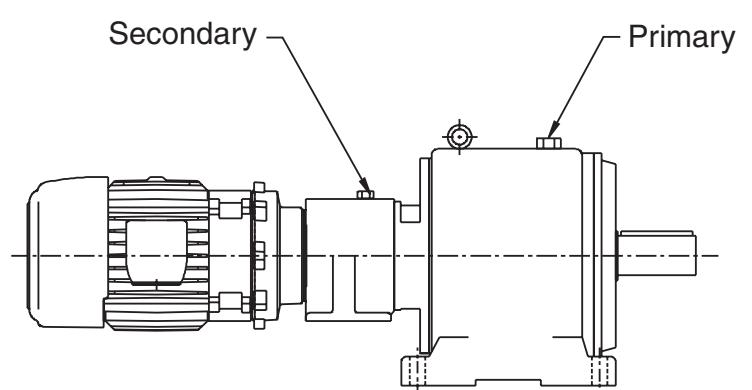
### Acceptable Mineral Oil Lubricants

Ambient Range of Installation					
-4°F to 14°F (-20°C to 10°C)	14°F to 122°F (-10°C to 50°C)				122°F and Above (50°C +)
	No Backstop		With Backstop		
ISO VG 68	ISO VG 100	ISO VG 150	ISO VG 220	ISO VG 150	ISO VG 320

#### One Thru Three Stage



#### Combined



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## Lubrication Oil Capacities (U.S. Quarts)

### One to Three Reduction

Stages	Gear Frame	Mounting Positions *											
		B3	B5	B6	B7	B8	B52	B53	B54	V1	V3	V5	V6
ONE (single reduction)	30	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
	31	0.37	0.37	0.53	0.53	0.74	0.53	0.74	0.53	0.58	1.06	0.58	1.06
	32	0.26	0.26	0.58	0.58	0.79	0.58	0.79	0.58	0.63	0.84	0.63	0.84
	33	0.95	0.95	1.48	1.48	2.01	1.48	2.01	1.48	2.22	2.22	2.22	2.22
	34	2.11	2.11	3.17	3.38	4.44	3.17	4.44	3.38	4.02	3.17	4.02	3.17
	35	3.38	3.38	5.49	5.28	7.71	5.49	7.71	5.28	6.13	5.81	6.13	5.81
TWO (Double Reduction)	30	0.63	0.63	0.63	0.63	0.63	-	-	-	0.63	0.63	0.63	0.63
	31	0.63	0.63	1.00	0.90	1.16	-	-	-	1.22	1.48	1.22	1.48
	32	1.00	1.00	1.85	1.64	2.38	-	-	-	2.38	2.85	2.38	2.85
	33	1.69	1.69	3.49	3.12	4.70	-	-	-	4.75	4.65	4.75	4.65
	34	3.49	3.49	7.40	4.97	7.08	-	-	-	7.93	7.93	7.93	7.93
	35	5.49	5.49	10.46	8.98	13.95	-	-	-	15.53	14.48	15.53	14.48
	36	8.45	8.45	12.69	19.02	23.77	-	-	-	25.36	25.89	25.36	25.89
	37	13.74	13.74	22.19	33.81	40.15	-	-	-	44.91	43.85	44.91	43.85
	38	17.96	17.96	26.42	53.89	61.30	-	-	-	68.68	64.46	68.68	64.46
THREE (Triple Reduction)	30	0.74	0.74	0.74	0.74	0.74	-	-	-	0.74	0.74	0.74	0.74
	31	0.63	0.63	1.30	0.90	1.16	-	-	-	1.22	1.48	1.22	1.48
	32	1.00	1.00	2.43	1.64	2.38	-	-	-	2.38	2.85	2.38	2.85
	33	1.69	1.69	4.62	3.12	4.70	-	-	-	4.75	4.65	4.75	4.65
	34	3.49	3.49	7.40	4.97	7.08	-	-	-	7.93	7.93	7.93	7.93
	35	5.49	5.49	13.21	8.98	13.95	-	-	-	15.53	14.48	15.53	14.48
	36	8.45	8.45	15.85	19.02	23.77	-	-	-	25.36	25.89	25.36	25.89
	37	13.74	13.74	28.50	33.81	40.15	-	-	-	44.91	43.85	44.91	43.85
	38	17.96	17.96	45.44	53.89	61.30	-	-	-	68.68	64.46	68.68	64.46

\* refer to page illustrating mounting positions based on reduction stage(s) and gear frame to be checked or filled

### Combined Gear Units -

Stages	Combined Gear Frame	Composition					
		Primary			Secondary		
		Frame	Stages	Type	Frame	Stages	Type
FOUR	3254	32	Two	CbN	30	Two	CbN
	3374	33	Two	CbN	30	Two	CbN
	3484	34	Two	CbN	31	Two	CbN
	3594	35	Two	CbN	31	Two	CbN
	3604	36	Two	CbN	32	Two	CbN
	3734	37	Two	CbN	32	Two	CbN
	3844	38	Two	CbN	34	Two	CbN
FIVE	3255	32	Two	CbN	30	Three	CbN
	3375	33	Two	CbN	30	Three	CbN
	3485	34	Two	CbN	31	Three	CbN
	3595	35	Two	CbN	31	Three	CbN
	3605	36	Two	CbN	32	Three	CbN
	3735	37	Two	CbN	32	Three	CbN
SIX	3845	38	Two	CbN	34	Three	CbN
	3256	32	Three	CbN	30	Three	CbN
	3376	33	Three	CbN	30	Three	CbN
	3486	34	Three	CbN	31	Three	CbN
	3596	35	Three	CbN	31	Three	CbN
	3606	36	Three	CbN	32	Three	CbN
	3736	37	Three	CbN	32	Three	CbN
	3846	38	Three	CbN	34	Three	CbN

**NOTE:**

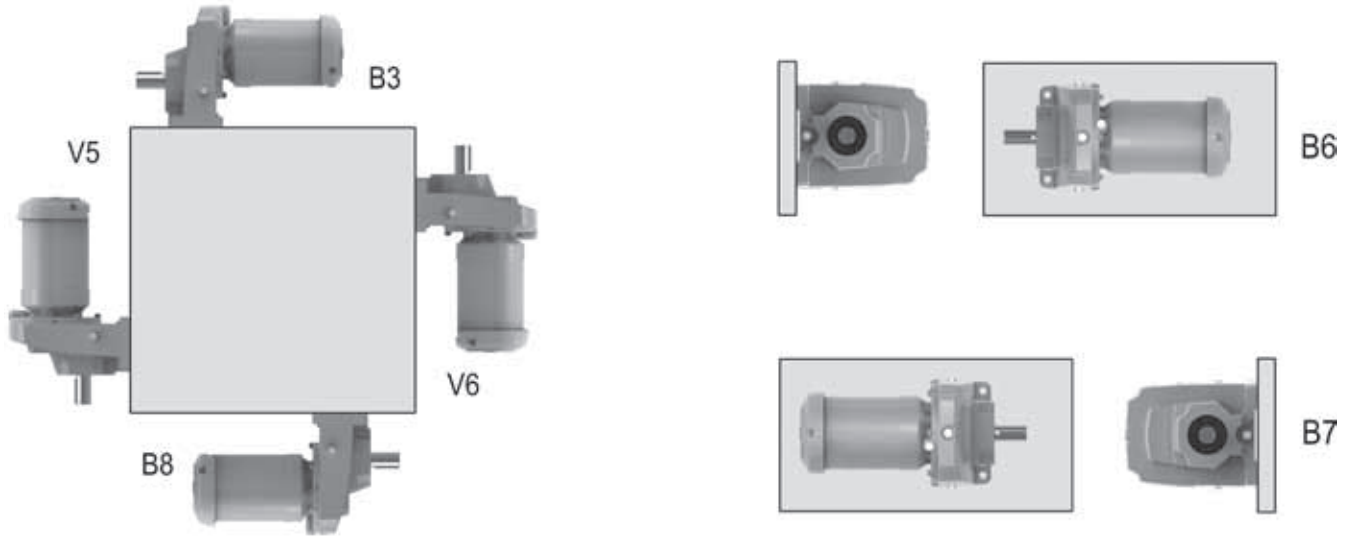
These consist of 2 CbN gear units assembled together. Each gear unit has a separate oil sump that is factory filled and requires monitoring before start-up and during operation. The table at left defines the gear size, and type for each CbN gear of a specific "combined" gear reducer.

Refer to the table above for oil volume based on mounting position specified

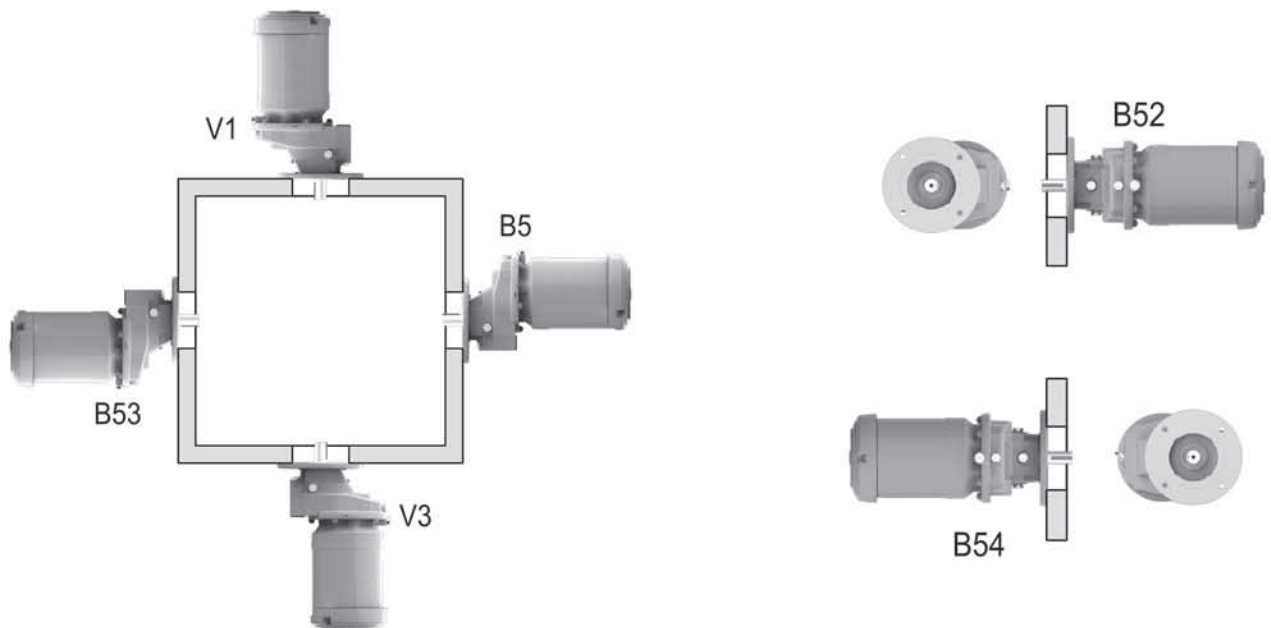
Oil sumps of frames 36, 37, and 38 are equipped with a dipstick (with breather) for the purposes of oil level monitoring when a unit is not operating.

Oil sumps of frames 31 through 35 are equipped with an oil level plugs for the purposes of oil level monitoring when that unit is not operating .

**Foot Mounted  
(with/without flange)**



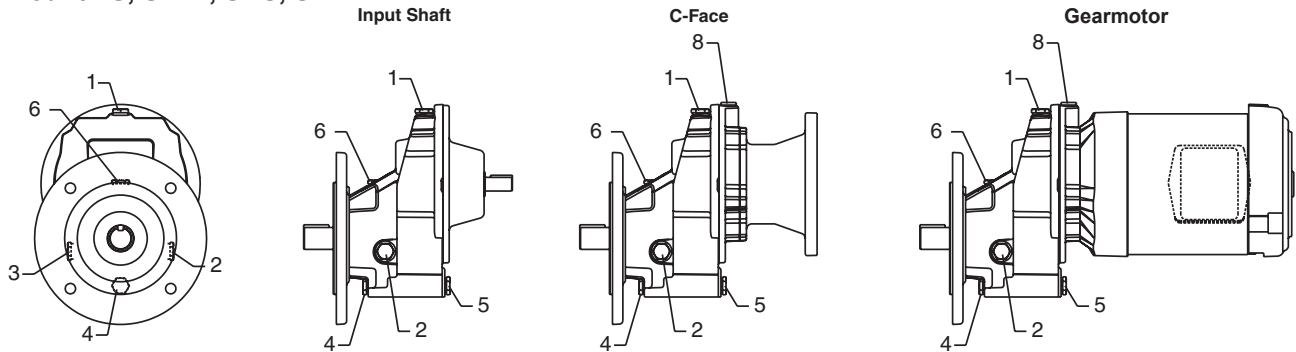
**Flange Mounted (Footless)**





## Single Reduction Plug Location and Assignments Frames 31 Thru 35

### Foot Mount - S, SB14, SBS, SBD2

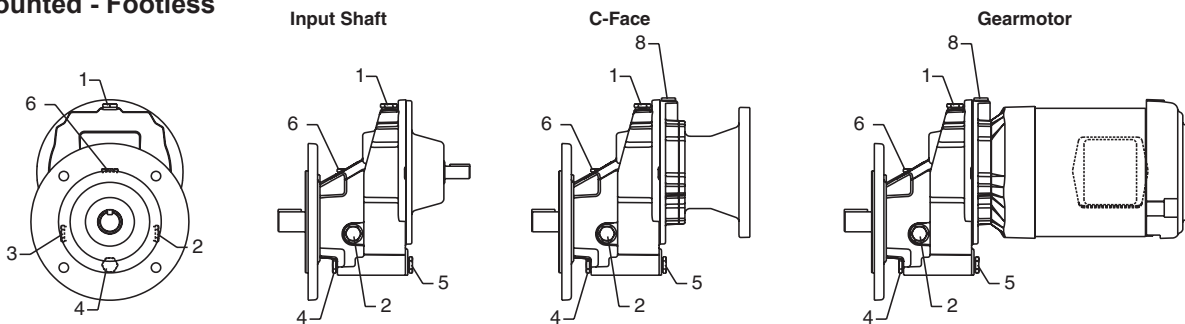


Mounting Position	Plug Function	Type Unit		
		Input Shaft	C-Face	Gearmotor
B3	Breather	1 or 6	8	8
	Level	2 or 3	2 or 3	2 or 3
	Drain	4	4	4
	Filling	1	1	1
B6	Breather	3	3 or 8	3 or 8
	Level	1 or 4	1 or 4	1 or 4
	Drain	2	2	2
	Filling	3	3	3
B7	Breather	2	2 or 8	2 or 8
	Level	1 or 4	1 or 4	1 or 4
	Drain	3	3	3
	Filling	2	2	2

Mounting Position	Plug Function	Type Unit		
		Input Shaft	C-Face	Gearmotor
B8	Breather	4 or 5	4 or 5	4 or 5
	Level	2 or 3	2 or 3	2 or 3
	Drain	1	1	1
	Filling	4 or 5	4 or 5	4 or 5
V5	Breather	5	5 or 8	5 or 8
	Level	1	1	1
	Drain	4	4	4
	Filling	5	5	5
V6	Breather	4	4	4
	Level	2 or 3	2 or 3	2 or 3
	Drain	1	8	8
	Filling	4	4	4

\* Frame 32 only

### Flange Mounted - Footless

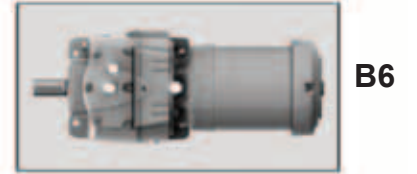
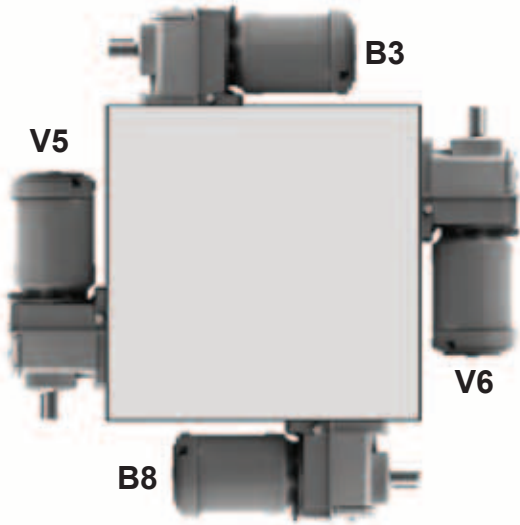


Mounting Position	Plug Function	Type Unit		
		Input Shaft	C-Face	Gearmotor
B5	Breather	1 or 6	8	8
	Level	2 or 3	2 or 3	2 or 3
	Drain	4	4	4
	Filling	1	1 or 8	1 or 8
B52	Breather	3	3 or 8	3 or 8
	Level	1 or 4	1 or 4	1 or 4
	Drain	2	2	2
	Filling	3	3	3
B54	Breather	2	2 or 8	2 or 8
	Level	1 or 4	1 or 4	1 or 4
	Drain	3	3	3
	Filling	2	2	2

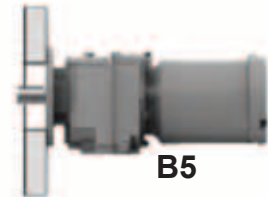
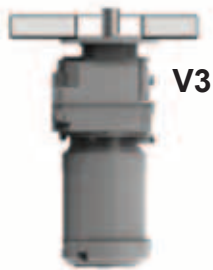
Mounting Position	Plug Function	Type Unit		
		Input Shaft	C-Face	Gearmotor
B53	Breather	4 or 5	4 or 5	4 or 5
	Level	2 or 3	2 or 3	2 or 3
	Drain	1	1	1
	Filling	4 or 5	4 or 5	4 or 5
V1	Breather	5	5	5
	Level	1	1	1
	Drain	4	4	4
	Filling	5	5 or 8	5 or 8
V3	Breather	4	4	4
	Level	2 or 3	2 or 3	2 or 3
	Drain	5	8	8
	Filling	4	4	4

\* Frame 32 only

Foot Mounted (with/without flange)



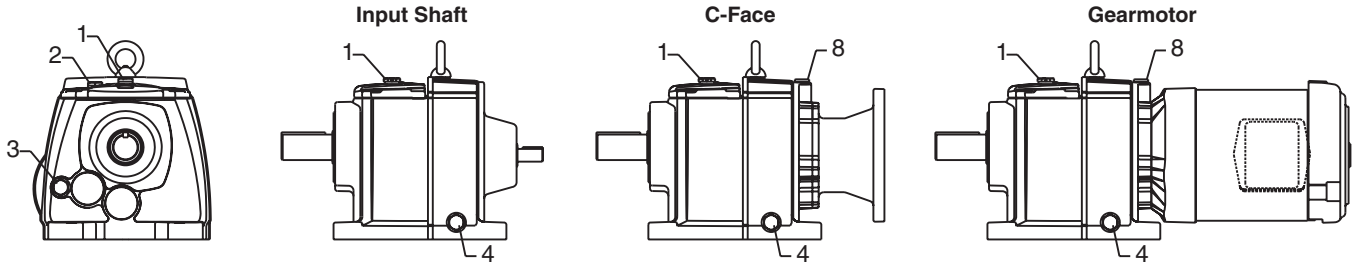
Flange Mounted (Footless)





## Multiple Reduction Plug Locations and Assignments Frames 31 Thru 35

### Foot Mount

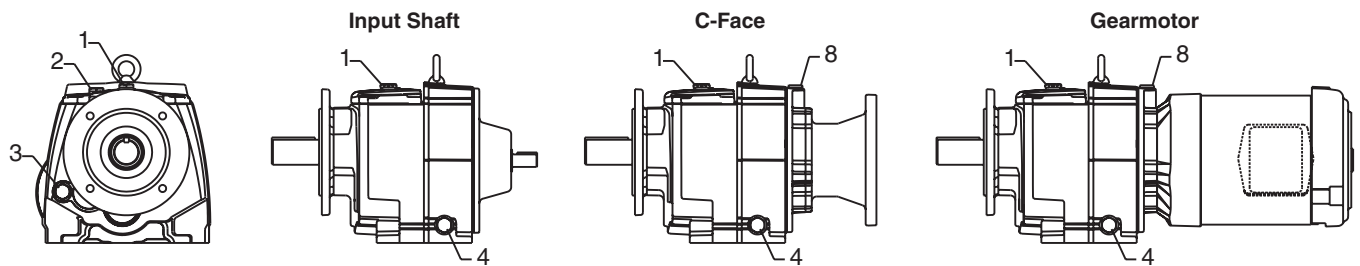


Mounting Position	Plug Function	Type Unit		
		Input Shaft	C-Face	Gearmotor
B3	Breather	1 or 2	1, 2 or 8	1, 2 or 8
	Level	3	3	3
	Drain	4	4	4
	Filling	1 or 2	1 or 2	1 or 2
B6	Breather	3	3 or 8	3 or 8
	Level	**	**	**
	Drain	4	4	4
	Filling	3	3	3
B7	Breather	4	4 or 8	4 or 8
	Level	1	1	1
	Drain	3	3	3
	Filling	4	4	4

Mounting Position	Plug Function	Type Unit		
		Input Shaft	C-Face	Gearmotor
B8	Breather	4	4 or 8	4 or 8
	Level	3	3	3
	Drain	1 or 2	1 or 2	1 or 2
	Filling	4	4	4
V5	Breather	4	8	8
	Level	4	4	4
	Drain	3	3	3
	Filling	4	8	8
V6	Breather	3	3	3
	Level	1 or 2	1 or 2	1 or 2
	Drain	4	8	8
	Filling	3	3	3

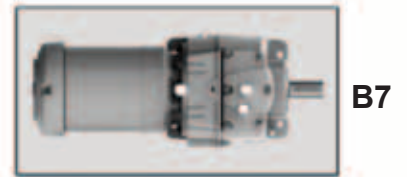
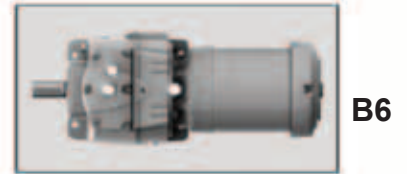
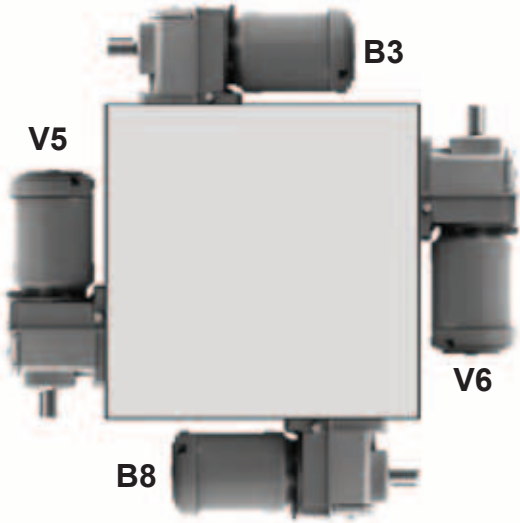
\*\* Double Reduction (except size 34) = 1, Triple Reduction = 2

### Flange or Face Mount - Footless

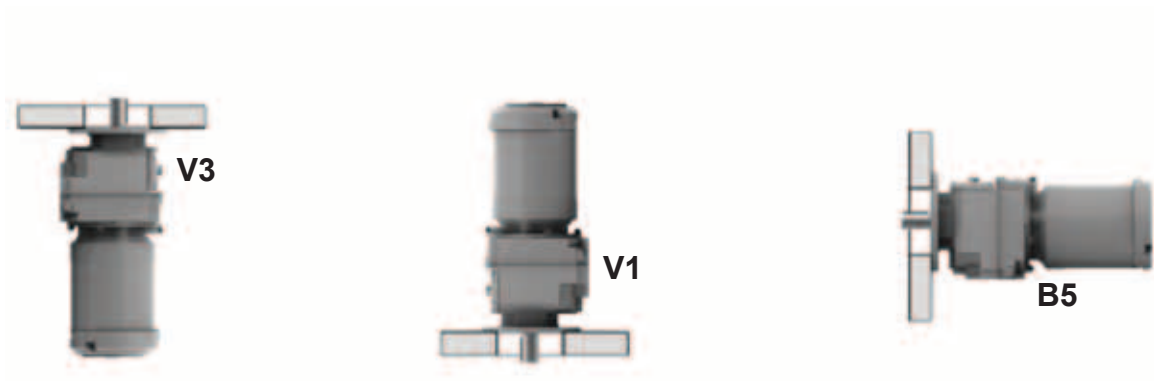


Mounting Position	Plug Function	Type Unit		
		Input Shaft	C-Face	Gearmotor
B5	Breather	1 or 2	1, 2 or 8	1, 2 or 8
	Level	3	3	3
	Drain	4	4	4
	Filling	1 or 2	1 or 2	1 or 2
V1	Breather	4	8	8
	Level	4	4	4
	Drain	3	3	3
	Filling	4	8	8
V3	Breather	3	3	3
	Level	1 or 2	1 or 2	1 or 2
	Drain	4	8	8
	Filling	3	3	3

**Foot Mounted (with/without flange)**



**Flange Mounted**



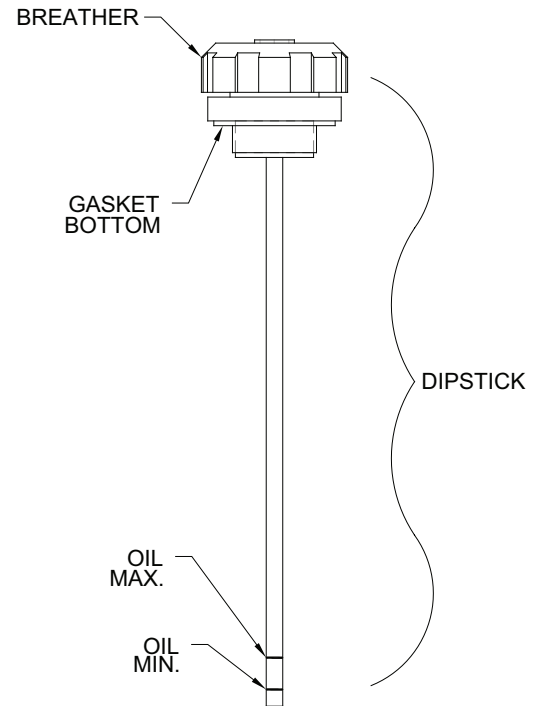




## Multiple Reduction Plug Locations and Assignments Frames 36 thru 38

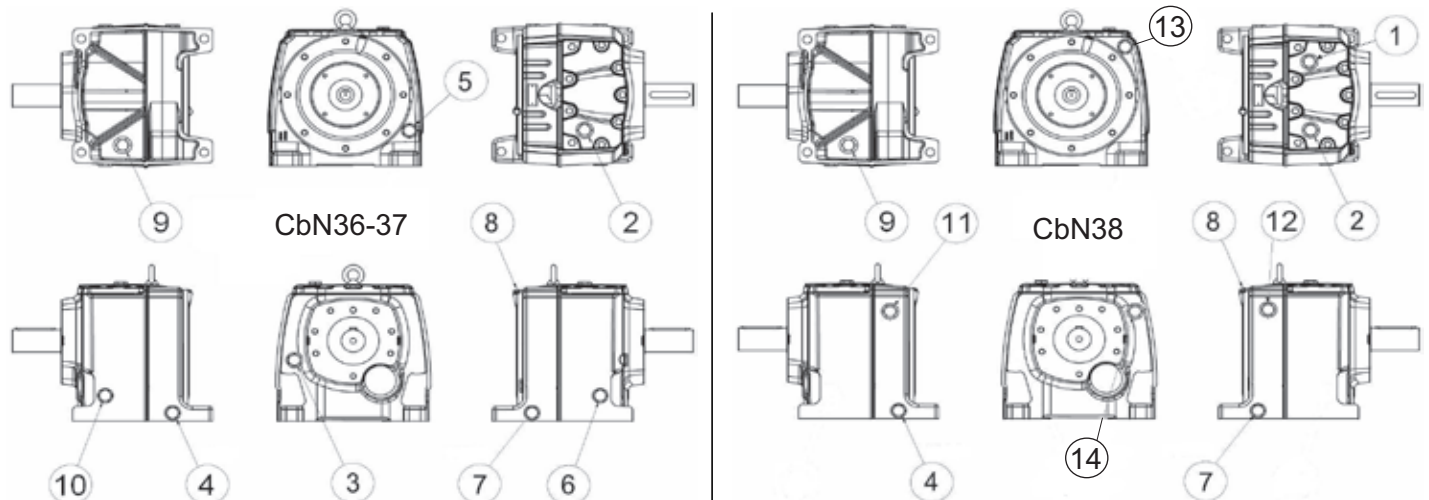
### All Foot, Flange, and Face Mounted Units

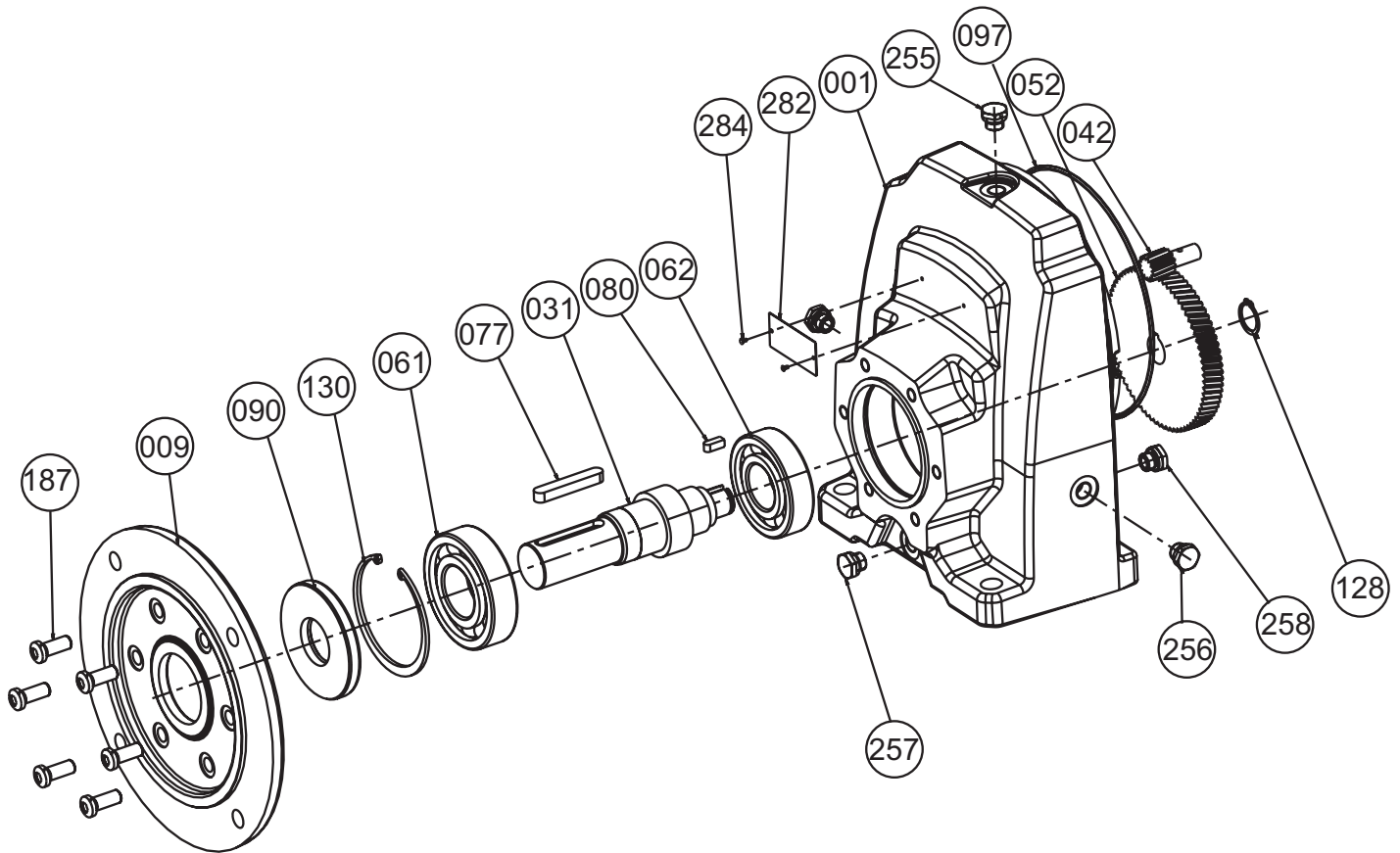
Mounting Position	Plug Function	Frame 36		Frame 37		Frame 38	
		Input Shaft	C-face and Gearmotor	Input Shaft	C-face and Gearmotor	Input Shaft	C-face and Gearmotor
B3 and B5	Breather	2	2	2	2	2	2
	Level **	2	2	2	2	2	2
	Drain	4	4	7	7	4	4
	Filling	2	2	2	2	1	1
B6	Breather	6	6	6	6	12	12
	Level **	6	6	6	6	12	12
	Drain	10	10	10	10	4	4
	Filling	6	6	6	6	7	7
B7	Breather	10	10	10	10	11	11
	Level **	10	10	10	10	11	11
	Drain	6	6	6	6	7	7
	Filling	10	10	10	10	4	4
B8	Breather	9	9	9	9	9	9
	Level	3***	3***	****	****	****	****
	Drain	2	2	2	2	2	2
	Filling	4	4	6	6	9	9
V5 and V1	Breather	5	5	5	5	13	13
	Level **	5	5	5	5	13	13
	Drain	3	3	3	3	14	14
	Filling	5	5	5	5	13	13
V6 and V3	Breather	3**	3**	3**	3**	14	14
	Level	6*	6*	3	3	14	14
	Drain	5	8	5	8	13	13
	Filling	3	3	3	3	14	14



\* Alternative oil level indication plug for flanged mounted units  
 \*\* This location will have dipstick for monitoring oil level unless noted  
 \*\*\* Level plug positioned on 90 degree elbow fitting  
 \*\*\*\* Sight tube supplied at position #2 for oil level indication

### Views





Gear Frame	Item Description by Location		
	Bearings		Seal (mm)
	061	062	090
30	6205 ZZ	6005	25 x 52 x 7 DL, nitrile
31	6205 1RS	6304	25 x 52 x 7 DL, nitrile
32	6206 RS	6305	30 x 62 x 7 DL, nitrile
33	6308 RS	6307	40 x 90 x 8 DL, nitrile
34	6309 ZZ BHT C3	6308	45 x 100 x 8 DL, nitrile
35	6310 RS	6309	50 x 110 x 12 DL, nitrile



## Single Reduction Parts Lists CbN 30 - 35

### CbN 30 - 35 (Quantity Per Unit)

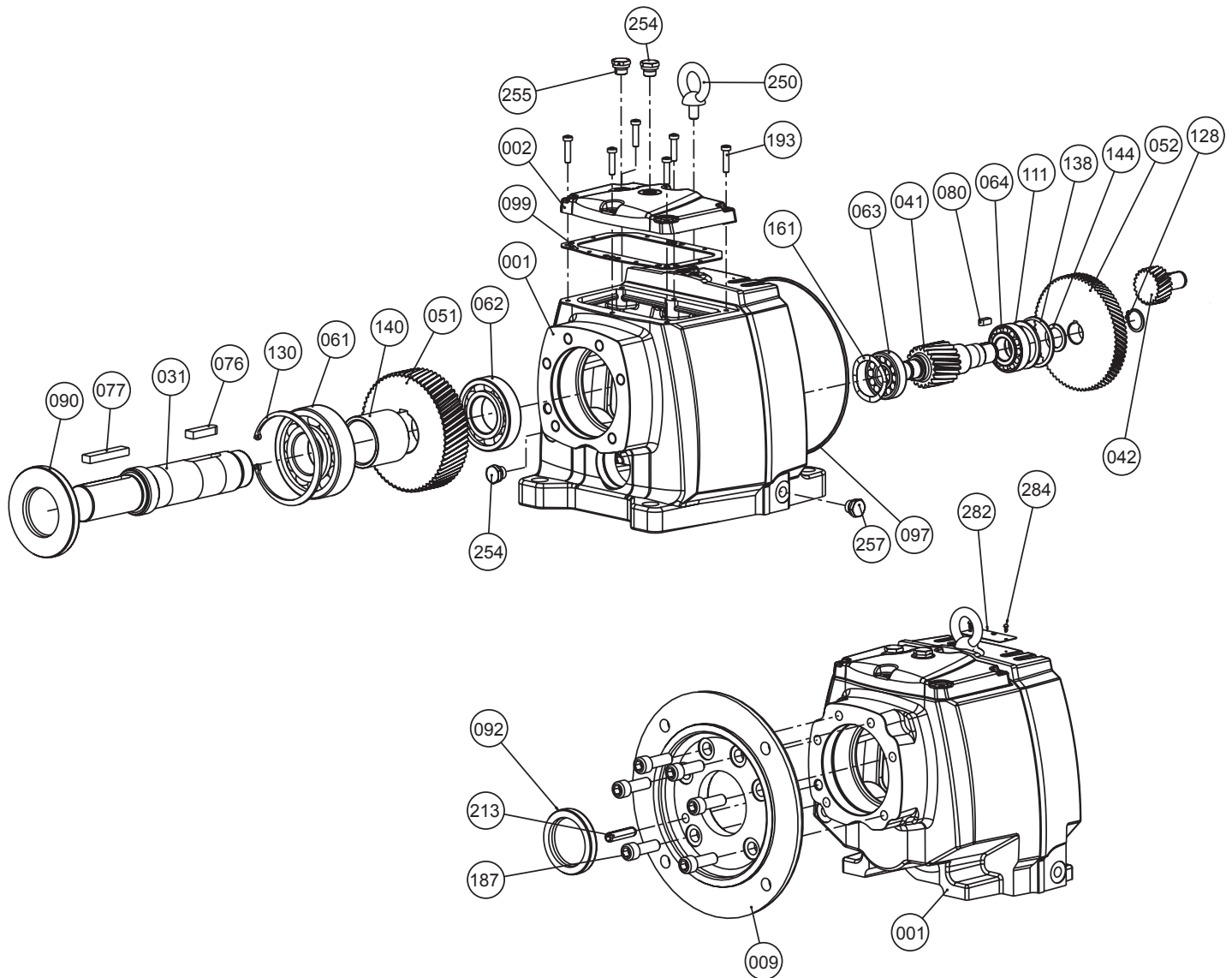
Rep	Description	30	31	32	33	34	35
001	Housing	1	1	1	1	1	1
009	Output Flange Ring	1	1	1	1	1	1
031	Output Shaft	1	1	1	1	1	1
042	Pinion	1	1	1	1	1	1
052	Gear	1	1	1	1	1	1
061	Bearing Front	1	1	1	1	1	1
062	Bearing Back	1	1	1	1	1	1
077	Output Shaft Key	1	1	1	1	1	1
080	Gear Key	1	1	1	1	1	1
090	Oil Seal	1	1	1	1	1	1
097	Input "O" Ring Seal (optional)	1	1	1	1	1	1
127	Bearing Snap Ring*	1	0	0	0	0	0
128	Gear Snap Ring	0	1	1	1	1	1

Rep	Description	30	31	32	33	34	35
130	Bearing Snap Ring	1	1	1	1	1	1
140	Gear Spacer*	0	1**	1**	0	0	0
175	Screw for Face-Plate*	4	0	0	0	0	0
185	Washer for Gear*	1	0	0	0	0	0
186	Screw Washer*	1	0	0	0	0	0
187	Bolt	4	4	4	6	6	6
213	Flange Dowel Pin*	0	1	1	1	1	1
255	Breather Plug	0	1	1	1	1	1
256	Level Plug	0	2	2	2	2	2
257	Drain Plug	0	1	1	1	1	1
258	Drain Plug	0	1	1	1	1	1
282	Nameplate	1	1	1	1	1	1
284	Nameplate Pin	0	2	2	2	2	2

\* Not illustrated.

\*\* Design revision 4/03.

## Double Reduction Parts List CbN 30 - 35



### Typical Maintenance Items - Bearings and Seals (Double Reduction)

Gear Frame	Item Description by Location				
	Bearings				Seal (mm)
	061	062	063	064	090
30	6205	6202	6300	6301	25 x 52 x 7 DL, nitrile
31	6206 ZZ BHT C3	6205	NJ 202 ECP	6202	35 x 62 x 6 DL, nitrile
32	6207 ZZ BHT C3	6206	60203	30203	42 x 72 x 8 DL, nitrile
33	6309 ZZ BHT C3	6208	30304	30205	52 x 100 x 10 DL, nitrile
34	6311 ZZ BHT C3	6310	30306	30306	62 x 120 x 12 DL, nitrile
35	6313 ZZ BHT C3	6310	33207	33207	72 x 140 x 12 DL, nitrile



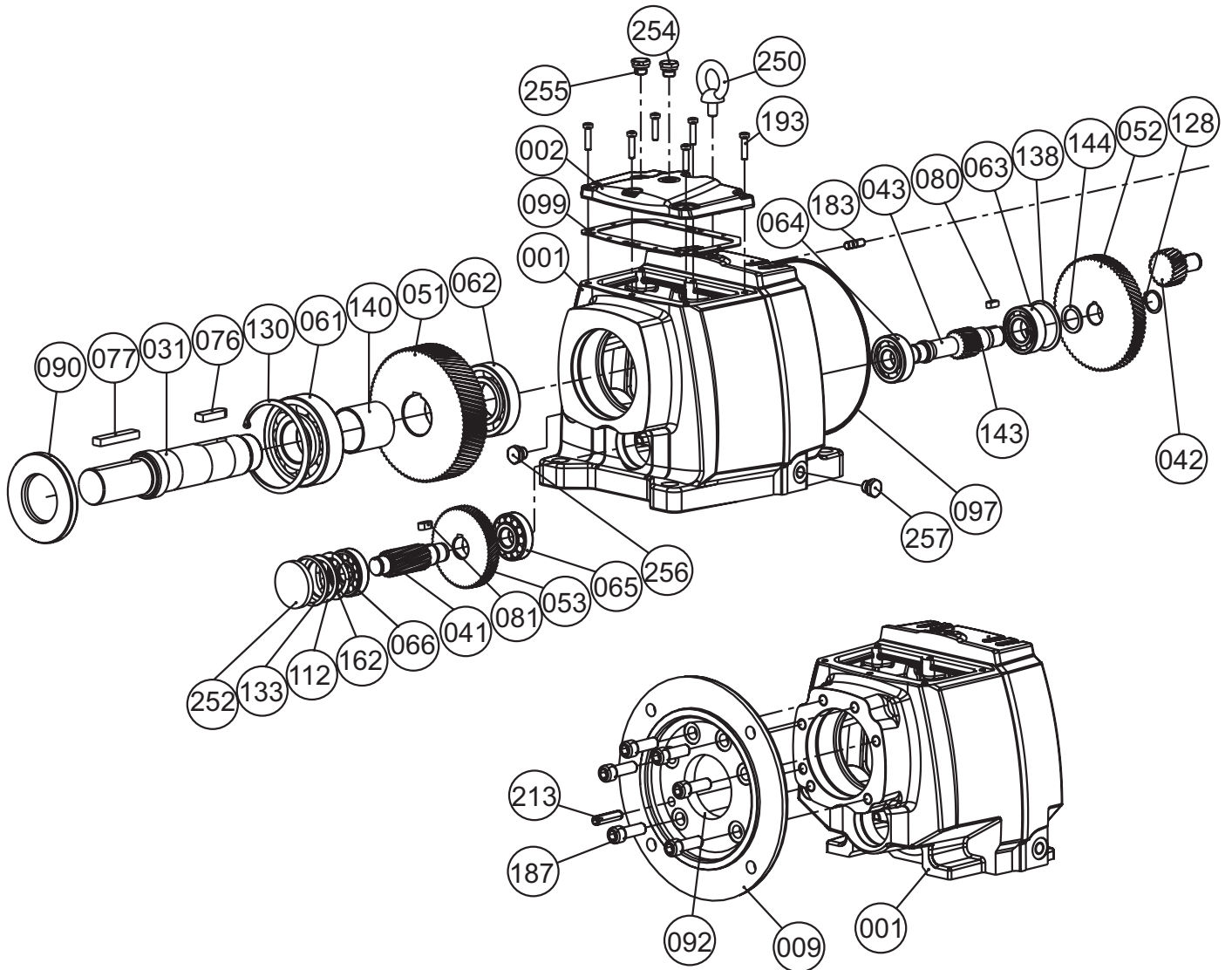
## Double Reduction Parts List CbN 30 - 35

### CbN 30 - 35 (Quantity Per Unit)

Rep	Description	30	31	32	33	34	35
001	Housing	1	1	1	1	1	1
002	Cover	1	1	1	1	1	1
009	Output Flange Ring	1	1	1	1	1	1
031	Output Shaft	1	1	1	1	1	1
041	Pinion Axis 3	1	1	1	1	1	1
042	Pinion (primary)	1	1	1	1	1	1
043	Pinion Axis 2	0	0	0	0	0	0
051	Gear Axis 4	1	1	1	1	1	1
052	Gear Axis 2	1	1	1	1	1	1
053	Gear Axis 3	0	0	0	0	0	0
061	Bearing Front Axis 4	1	1	1	1	1	1
062	Bearing Back Axis 4	1	1	1	1	1	1
063	Bearing Front Axis 2	1	1	1	1	1	1
064	Bearing Back Axis 2	1	1	1	1	1	1
065	Bearing Front Axis 3	0	0	0	0	0	0
066	Bearing Back Axis 3	0	0	0	0	0	0
076	Gear Key	1	1	1	1	1	1
077	Output Shaft Key	1	1	1	1	1	1
080	Gear Key	1	1	1	1	1	1
081	Gear Key Axis 3	0	0	0	0	0	0
090	Oil Seal	1	1	1	1	1	1
092	Flange Oil Seal (Opt.)	0	1	1	1	1	1
097	Input O-Ring (Opt.)	1	1	1	1	1	1
099	Cover Gasket	1	1	1	1	1	1
111	Bearing Spacer Axis 2*	0	0	0	1	0	0
112	Bearing Spacer Axis 3	0	0	0	0	0	0
114	Bearing Spacer Axis 3*	0	0	0	0	0	0
115	Bearing Spacer Axis 2*	0	0	1	0	1	1
127	Bearing Snap Ring *	1	0	0	0	0	0

Rep	Description	30	31	32	33	34	35
128	Gear Snap Ring	0	1	1	1	1	1
130	Bearing Snap Ring	1	1	1	1	1	1
132	Bearing Snap Ring *	0	0	1	0	1	1
133	Bearing Snap Ring	0	0	0	0	0	0
134	Bearing Snap Ring *	0	0	0	0	0	0
138	Bearing Snap Ring	1	1	1	1	0	0
140	Gear Spacer Axis 4	0	1	1	1	1	1
143	Bearing Spacer	0	0	0	0	0	0
144	Gear Spacer (primary)	0	1	1	1	1	1
161	Flexible Wavy Washer *	0	0	0	1	1	1
162	Flexible Wavy Washer	0	0	0	0	0	0
163	Flexible Wavy Washer *	0	0	0	0	0	0
164	Flexible Wavy Washer *	0	0	1	0	0	0
175	Screw For Face Plate *	4	0	0	0	0	0
183	Input Cover Stud	0	4	5	6	4	8
185	Washer To Gear *	1	0	0	0	0	0
186	Screw Washer *	1	0	0	0	0	0
187	Fixing Screws	4	4	6	6	6	6
193	Cover Fixing Screw	4	4	6	6	8	8
213	Flange Dowel Pin	0	1	1	1	1	1
250	Lifting Eye	0	0	1	1	1	1
251	Plug *	0	0	1	0	1	1
252	Gear Case Plug	0	0	0	0	0	0
254	Drain Plug	0	1	1	1	1	1
255	Breather Plug	0	1	1	1	1	1
256	Level Plug	0	1	1	1	1	1
257	Drain PLug	0	1	1	1	1	1
282	Nameplate	1	1	1	1	1	1

\* Not Illustrated



### Typical Maintenance Items - Bearings and Seals (Triple Reduction)

Gear Frame	Item Description by Location						
	Bearings						Seal (mm)
	061	062	063	064	065	066	090
30	6205	6202	6201	6201	6300	6300	25 x 52 x 7 DL, nitrile
31	6206 ZZ BHT C3	6205	6201	6202	6202	6202	35 x 62 x 6 DL, nitrile
32	6207 ZZ BHT C3	6206	6203	6203	30203	30203	42 x 72 x 8 DL, nitrile
33	6309 ZZ BHT C3	6208	6304	6205	30304	30304	52 x 100 x 10 DL, nitrile
34	6311 ZZ BHT C3	6310	6306	6306	30305	30305	62 x 120 x 12 DL, nitrile
35	6313 ZZ BHT C3	6310	6306	6207	32207	32207	72 x 140 x 12 DL, nitrile

DL = Double lipped.



## Triple Reduction Parts List CbN 30 - 35

### CbN 30 - 35 (Quantity Per Unit)

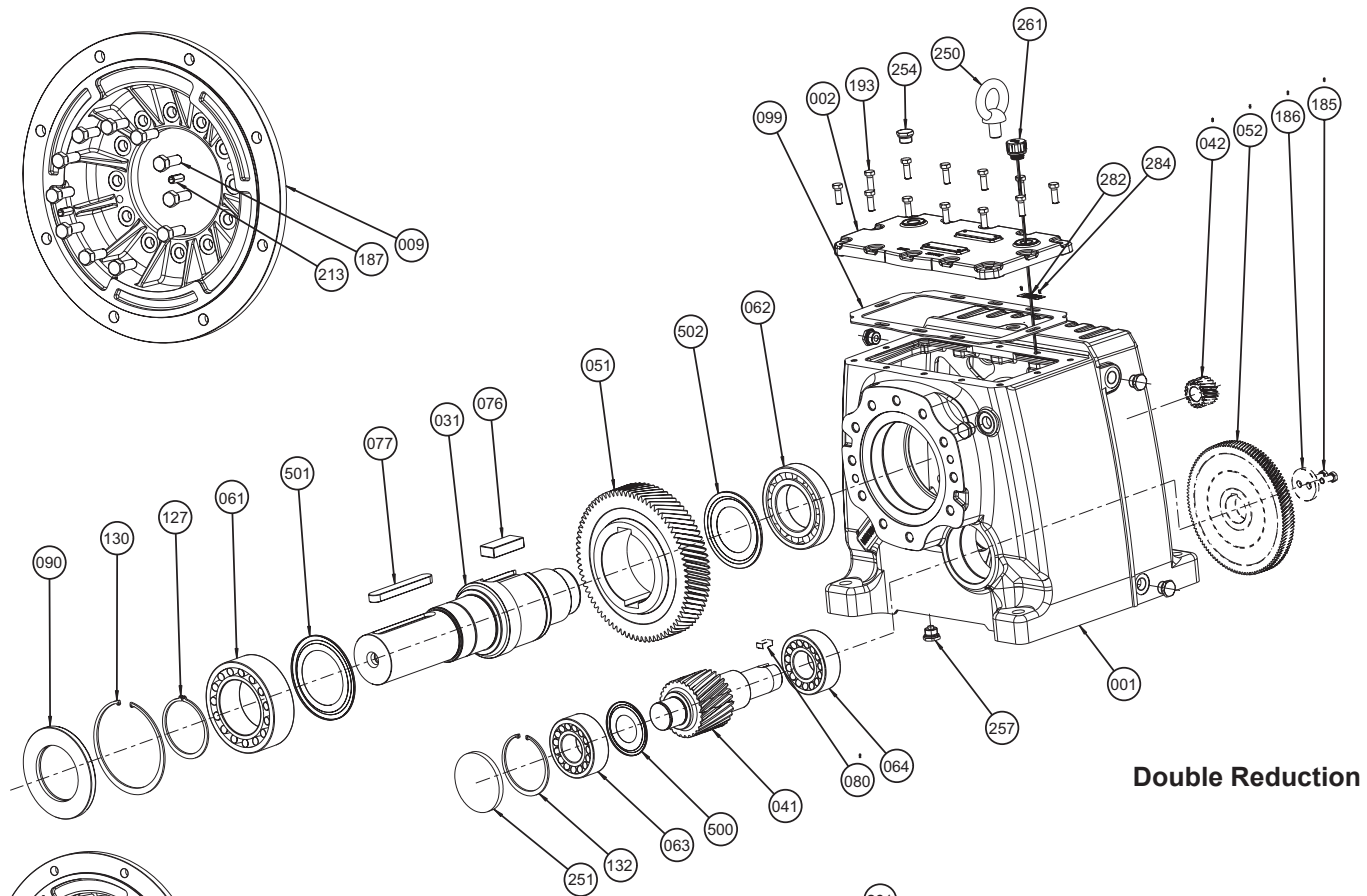
Rep	Description	30	31	32	33	34	35
001	Housing	1	1	1	1	1	1
002	Cover	1	1	1	1	1	1
009	Output Flange Ring	1	1	1	1	1	1
031	Output Shaft	1	1	1	1	1	1
041	Pinion Axis 3	1	1	1	1	1	1
042	Pinion (primary)	1	1	1	1	1	1
043	Pinion Axis 2	1	1	1	1	1	1
051	Gear Axis 4	1	1	1	1	1	1
052	Gear Axis 2	1	1	1	1	1	1
053	Gear Axis 3	1	1	1	1	1	1
061	Bearing Front Axis 4	1	1	1	1	1	1
062	Bearing Back Axis 4	1	1	1	1	1	1
063	Bearing Front Axis 2	1	1	1	1	1	1
064	Bearing Back Axis 2	1	1	1	1	1	1
065	Bearing Front Axis 3	1	1	1	1	1	1
066	Bearing Back Axis 3	1	1	1	1	1	1
076	Gear Key	1	1	1	1	1	1
077	Output Shaft Key	1	1	1	1	1	1
080	Gear Key	1	1	1	1	1	1
081	Gear Key Axis 3	1	1	1	1	1	1
090	Oil Seal	1	1	1	1	1	1
092	Flange Oil Seal (Opt.)	0	1	1	1	1	1
097	Input O-Ring (Opt.)	1	1	1	1	1	1
099	Cover Gasket	1	1	1	1	1	1
111	Bearing Spacer Axis 2*	0	0	0	1	0	0
112	Bearing Spacer Axis 3	0	0	0	1	1	1
114	Bearing Spacer Axis 3*	0	1	1	0	0	0
115	Bearing Spacer Axis 2*	0	0	0	0	0	0
127	Bearing Snap Ring *	1	0	0	0	0	0

Rep	Description	30	31	32	33	34	35
128	Gear Snap Ring	0	1	1	1	1	1
130	Bearing Snap Ring	1	1	1	1	1	1
132	Bearing Snap Ring *	0	0	1	0	1	1
133	Bearing Snap Ring	0	1	1	1	1	1
134	Bearing Snap Ring *	1	0	0	0	0	0
138	Bearing Snap Ring	1	1	1	1	0	0
140	Gear Spacer Axis 4	0	1	1	1	1	1
143	Bearing Spacer	0	0	0	1	0	0
144	Gear Spacer (primary)	0	1	1	1	1	1
161	Flexible Wavy Washer *	0	0	0	1	0	0
162	Flexible Wavy Washer	0	0	0	1	1	1
163	Flexible Wavy Washer *	0	0	1	0	0	0
164	Flexible Wavy Washer *	0	0	0	0	0	0
175	Screw For Face Plate *	4	0	0	0	0	0
183	Input Cover Stud	0	4	5	6	4	8
185	Washer To Gear *	1	0	0	0	0	0
186	Screw Washer *	1	0	0	0	0	0
187	Fixing Screws	4	4	6	6	6	6
193	Cover Fixing Screw	4	4	6	6	8	8
213	Flange Dowel Pin	0	1	1	1	1	1
250	Lifting Eye	0	0	1	1	1	1
251	Plug *	0	0	1	0	1	1
252	Gear Case Plug	0	1	1	1	1	1
254	Drain Plug	0	1	1	1	1	1
255	Breather Plug	0	1	1	1	1	1
256	Level Plug	0	1	1	1	1	1
257	Drain PLug	0	1	1	1	1	1
282	Nameplate	1	1	1	1	1	1

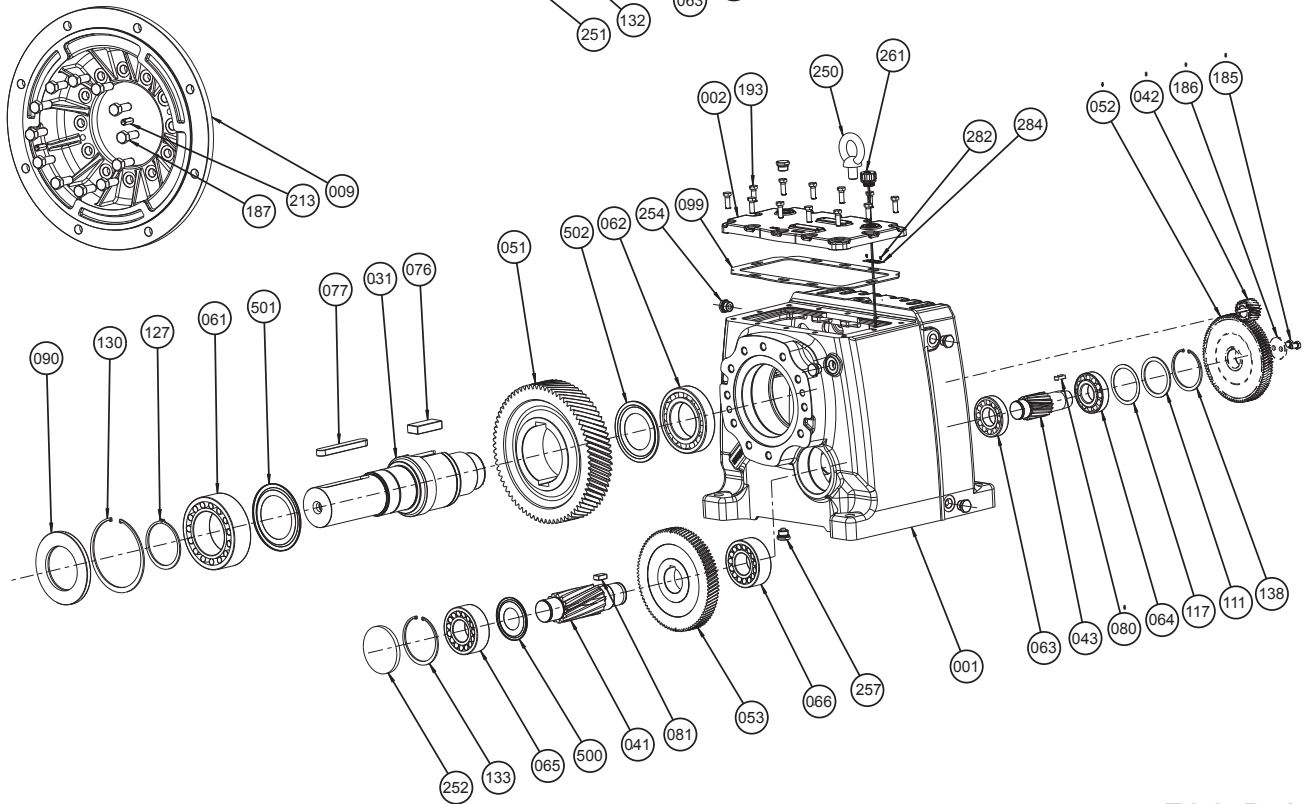
\* Not Illustrated



## Multiple Reduction Parts List CbN 36 - 38



**Double Reduction**



**Triple Reduction**





## Multiple Reduction Parts List CbN 36 - 38

### CbN 36 to 38 (Quantity Per Unit)

Item #	Description	Double Reduction			Triple Reduction		
		36	37	38	36	37	38
001	Housing	1	1	1	1	1	1
002	Cover	1	1	1	1	1	1
009	Output Flange Ring	1	1	1	1	1	1
031	Output Shaft	1	1	1	1	1	1
041	Pinion Axis 3	0	0	0	1	1	1
042	Pinion Axis 1	1	1	1	1	1	1
043	Pinion Axis 2	0	0	0	1	1	1
051	Gear Axis 4	1	1	1	1	1	1
052	Gear Axis 2	1	1	1	1	1	1
053	Gear Axis 3	0	0	0	1	1	1
061	Bearing Front Axis 4	1	1	1	1	1	1
062	Bearing Back Axis 4	1	1	1	1	1	1
063	Bearing Front Axis 2	1	1	1	1	1	1
064	Bearing Back Axis 2	1	1	1	1	1	1
065	Bearing Front Axis 3	0	0	0	1	1	1
066	Bearing back Axis 3	0	0	0	1	1	1
076	Gear Key	1	1	1	1	1	1
077	Output Shaft Key	1	1	1	1	1	1
080	Gear Key	1	1	1	1	1	1
081	Gear Key Axis 3	0	0	0	1	1	1
090	Oil seal	1	1	1	1	1	1
099	Cover gasket	1	1	1	1	1	1
111	Bearing Spacer Axis 2	0	0	0	1	0	1
117	Shims	0	0	0	0	0	1
119	Bearing Spacer Axis 2	0	0	0	0	1	1

Item #	Description	Double Reduction			Triple Reduction		
		36	37	38	36	37	38
127	Bearing snap ring	0	1	1	0	1	1
128	Washer Gear Axis 2	0	0	0	1	0	0
130	Bearing Snap Ring	1	1	1	1	1	1
132	Bearing Snap Ring	1	1	1	0	0	0
133	Bearing Snap Ring	0	0	0	1	1	1
137	Snap Ring	0	1	1	0	0	0
138	Snap Ring	0	1	0	1	1	1
142	Bolt For Gear Axis 2	1	2	2	0	1	2
154	Gear Spacer	0	0	0	1	0	0
187	Fixing Screws	7	9	11	7	9	11
193	Cover Fixing Screws	9	12	11	9	12	11
213	Flange Roll Pin	1	1	2	1	1	2
250	Lifting eye	1	1	1	1	1	1
251	Bore plug	1	1	1	0	0	0
252	Gearcase Bore plug	0	0	0	1	1	1
254	Plug	5	5	7	5	5	7
257	Magnetic drain plug	1	1	1	1	1	1
261	Dipstick/Breather	1	1	1	1	1	1
282	Nameplate	1	1	1	1	1	1
284	Rivet	2	2	2	2	2	2
500	Nilos ring Axis 2	0	0	1	0	0	1
501	Nilos ring Axis 4 front	1	1	1	1	1	1
502	Nilos ring Axis 4 back	0	0	1	0	0	1
517	Snap Ring	1	0	0	1	0	0

### Typical Maintenance Items - Bearings and Seals (Double Reduction)

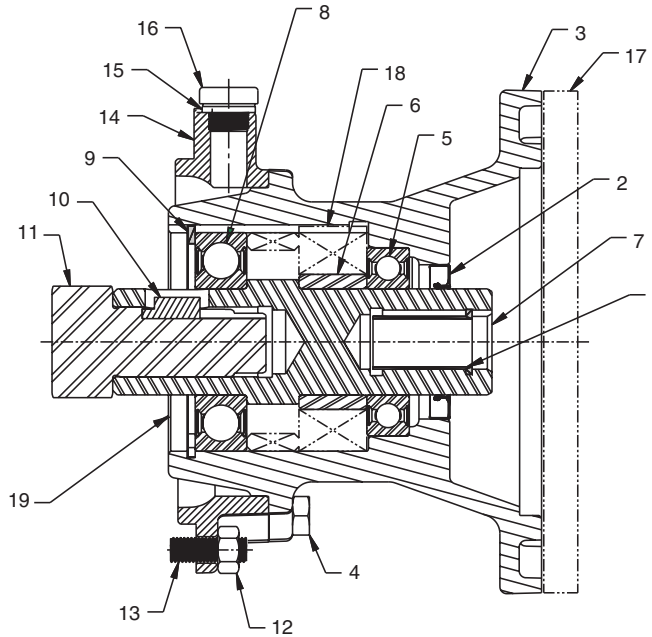
Gear Frame	Item Description				
	Bearings				Seal (mm)
	061	062	063	064	090
36	22217E	NJ214 ECP	22308E	22208E	85x150x12 DL, nitrile
37	22220	NJ217	22311	22310E	100x180x12 DL, nitrile
38	23124E	NJ220	22312E	22312E	120x200x14 DL, nitrile

### Typical Maintenance Items - Bearings and Seals (Triple Reduction)

Gear Frame	Item Description						
	Bearings						Seal (mm)
	061	062	063	064	065	066	090
36	22217E	NJ214 ECP	32206B	32207	22308E	22208E	85x150x12 DL, nitrile
37	22220	NJ217	30308	30308	22311	22310E	100x180x12 DL, nitrile
38	23124E	NJ220	30310	30310	22312E	22312E	120x200x14 DL, nitrile



## C-Face Input Parts Lists (Quantity Per Unit) CbN 30 - 38



No.	Description	56C	140TC	180TC	210TC	250TC	280TC	320TC♦
1	Non-Metallic Liner	1	1	1	1	1	1	1
2	Seal	1	1	1	1	1	1	1
3	Motor Adapter	1	1	1	1	1	1	1
4	Capscrew	6	6	6	6	6	6	6
5	Bearing	1	1	1	1	1	1	1
6	Spacer	1 †	1 †	1	1	1	1	1
7	Input Shaft	1	1	1	1	1	1	1
8	Bearing	1	1	1	1	1	1	1
9	Internal Snap Ring	1	1	1	1	1	1	1
10	Key*	1	1	1	1	1	1	1
11	Pinion	1	1	1	1	1	1	1
12	Nuts†	**	**	**	**	**	**	**
13	Studs†	**	**	**	**	**	**	**
14	Adapter Flange	1 †	1 †	1	1	1	1	1
15	Gasket	1 †	1 †	1	1	1	1	1
16	Plug (1/4")	1 †	1 †	1	1	1	1	1
17	Motor Adapter Flange	N/A	N/A	N/A	N/A	1***	1	N/A
18	Backstop Kit (option)	1 †	1 †	1	1	1	1	1
19	Seal	0	0	0	0	0	1	1

\* Pin used with 9mm, 12mm, 15mm and 18mm pinion.

\*\* Depending on gear frame size: 31 = 4, 32 = 5, 33 = 6, 34 = 4, 35 = 8.

\*\*\*Applicable to size 33.

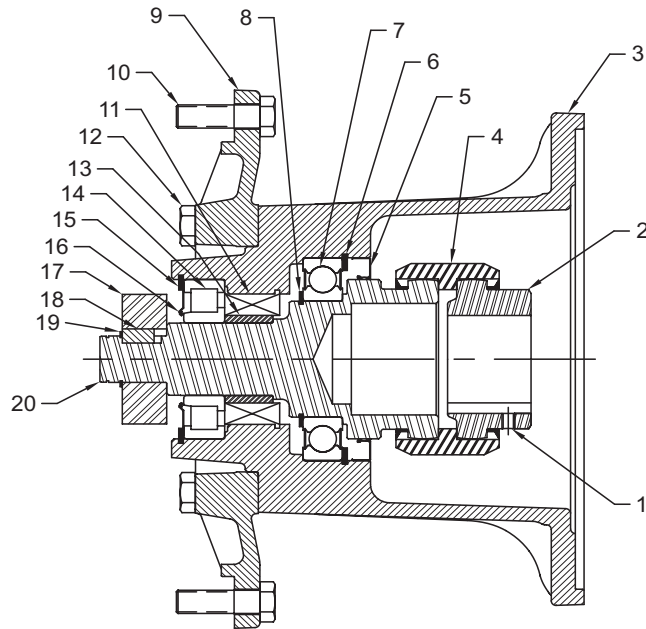
† Not applicable to size 30.

♦ Not applicable to sizes 36 and 37

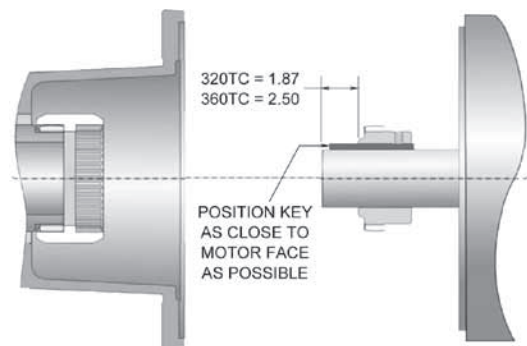
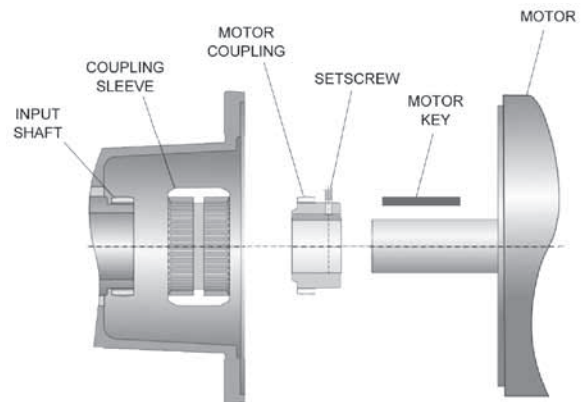
Gear Frame (s)	Motor Frame (s)	Bearings		Oil Seal (inches)
		5	8	9
30	56C, 140TC	6006 2RS	6004 2RS	55 X 30 X 10 (mm)
31 to 36	56C, 140TC	6007 ZZ C3	6207 ZZ C3	2 X 1.375 X .312
31 to 37	180TC	6012 ZZ C3	6210 ZZ C3	4 X 2.250 X .468
32 to 37	210TC	6012 ZZ C3	6210 ZZ C3	4 X 2.250 X .468
38	210TC	6014 ZZ C3	NJ210	4.438 X 2.625 X .437
34 to 38	250TC, 280TC	6014 ZZ C3	NJ210	4.438 X 2.625 X .437
35 *	320TC	6216 ZZ C3	NJ310	140 X 90 X 12 (mm)

\* For 36 through 38 frame with 320TC input, refer to opposing page

## C-Face Input Parts Lists (Quantity Per Unit) CbN 36 - 38



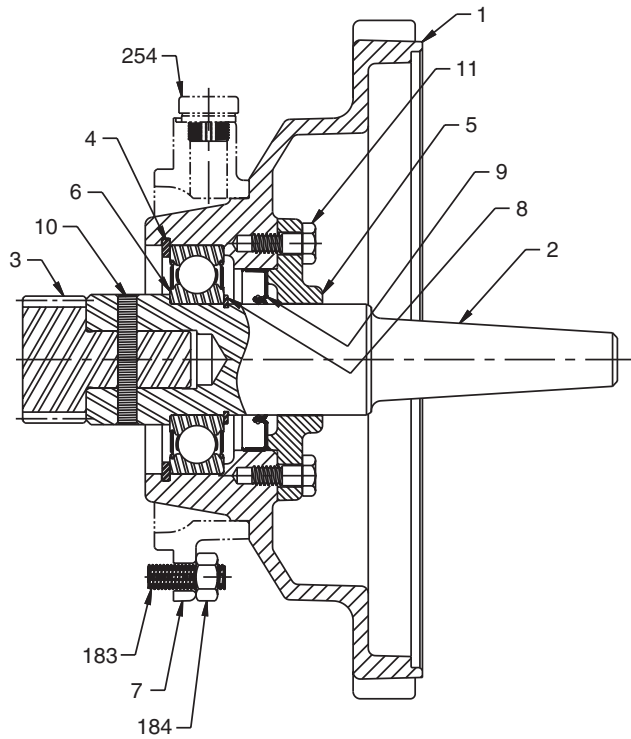
No.	Description of Part	320TC/360TC
1	Setscrew	1
2	Motor Coupling	1
3	Motor Adapter	1
4	Coupling Sleeve	1
5	Seal	1
6	Internal Snap Ring	1
7	Bearing	1
8	External Snap Ring	1
9	Adapter Flange	1
10	Capscrew	8
11	Backstop	1
12	Capscrew	12
13	Spacer	1
14	Bearing	1
15	Internal Snap Ring	1
16	Bearing Seal	1
17	Pinion	1
18	Key	1
19	External Snap Ring	1
20	Input Shaft	1



Gear Frame	Bearings		Oil Seal (inches)
	7	14	9
36 to 38	6216 ZZ C3	NJ310	140 x 110 x 12 (mm) nitrile



## Gearmotor Input Parts Lists (Quantity Per Unit) CbN 30 - 38



No.	Description	30	31	32	33	34	35
1	Motor Adapter	1	1	1	1	1	1
2	Input Shaft	1	1	1	1	1	1
3	Pinion	1	1	1	1	1	1
4	Internal Snap Ring	1	1	1	1	1	1
5	Bearing Cap**	†	1	1	1	1	1
6	Bearing	1	1	1	1	1	1
7	Adapter Flange	†	1	1	1	1	1
8	External Snap Ring	1	1	1	1	1	1
9	Seal	1	1	1	1	1	1
10	Pinion Pin	1	1	1*	1*	1*	1*
11	Capscrew**	†	2	2	2	2	2
183	Stud	4	4	5	6	4	8
184	Nut	4	4	5	6	4	8
254	Plug (or Breather)	†	1	1	1	1	1

\* Key used with 23mm and 32mm pinion.

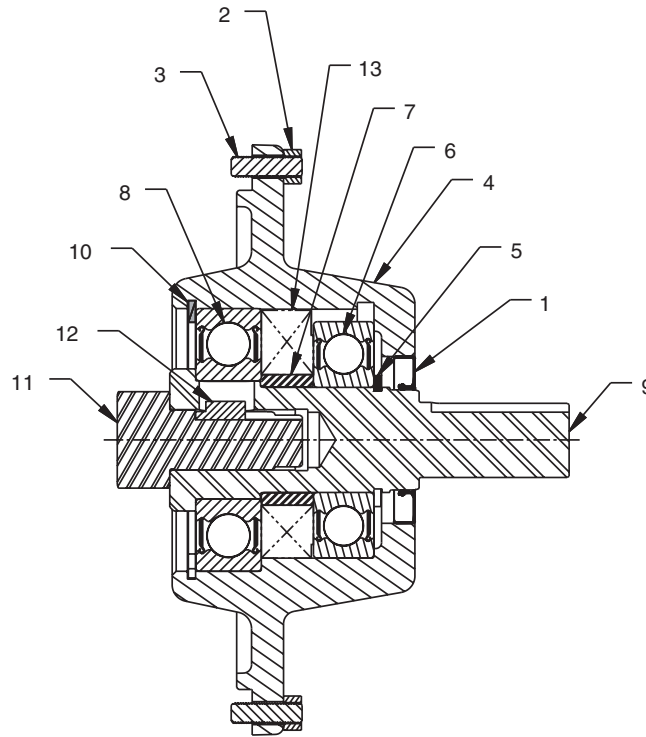
\*\* Explosionproof motor only, except on frame 30.

† Not applicable to size 30.

Gear Frame	Motor Frame	Bearings	Seal (inches)
		6	9
30	56, 140T	6005 ZZ C3	47 x 25 x 7 (mm)
31	48	6005 ZZ C3	1.50 x .937 x .250
31 to 37	56, 140T	6007 ZZ C3	2.25 x 1.375 x .312
	180T, 210T	6207 ZZ C3	2.25 x 1.375 x .312
38	210T	6310 ZZ C3	3.500 x 2.250 x .375
33	250T	6209 ZZ C3	2.875 x 1.750 X .375
34 to 38	250T , 280T	6310 ZZ C3	3.500 x 2.250 x .375
35 to 38	320T	6311 ZZ C3	3.875 x 2.5 x .470



## AP Input Shaft Parts Lists (Quantity Per Unit) CbN 30 - 35



No.	Description	30	31	32	33	34	35
1	Seal	1	1	1	1	1	1
2	Nuts	1	4	5	6	4	8
3	Studs	4	4	5	6	4	8
4	Housing	1	1	1	1	1	1
5	External Snap Ring	1	1	1	1	1	1
6	Bearing	1	1	1	1	1	1
7	Spacer	0	1	1	1	1	1
8	Bearing	1	1	1	1	1	1
9	Input Shaft	1	1	1	1	1	1
10	Internal Snap Ring	1	1	1	1	1	1
11	Pinion	1	1	1	1	1	1
12	Key*	1	1	1	1	1	1
13	Backstop Kit (Option)	†	1	1	1	1	1

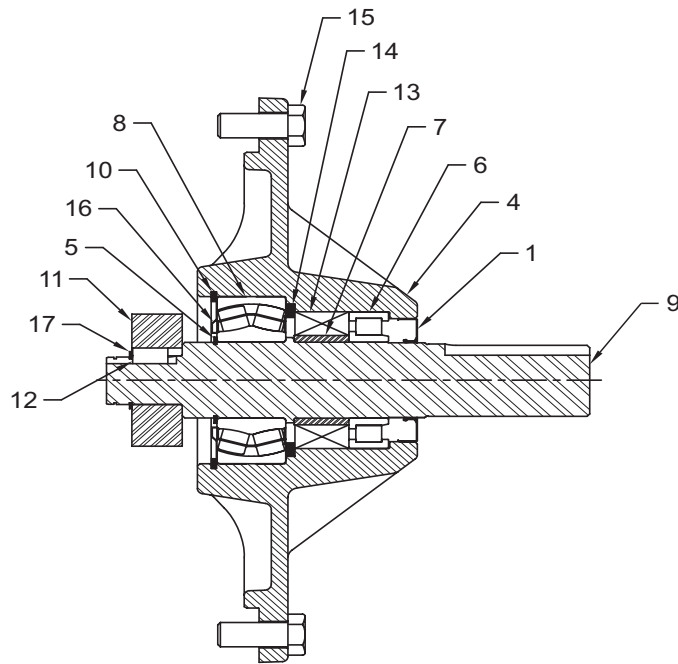
\* Pin used with 9mm, 15mm and 18mm pinion.

† Not applicable to size 30.

Gear Frame	Bearings		Oil Seal (inches)
	6	8	1
30	6203 2RS	6204 2RS	28 x 17 x 7 (mm) DL, nitrile
31, 32	6206 ZZ C3	6207 ZZ C3	1.875 x 1.125 x .25 DL, nitrile
33	6308 ZZ C3	6309 ZZ C3	2.5 x 1.50 x .312 DL, nitrile
34	NJ209	6311 ZZ C3	2.5 x 1.50 x .312 DL, nitrile
35	NJ210	6312 ZZ C3	3.188 x 1.938 x .438 DL, nitrile



**AP Input Shaft Parts Lists (Quantity Per Unit)  
CbN 36 - 38**



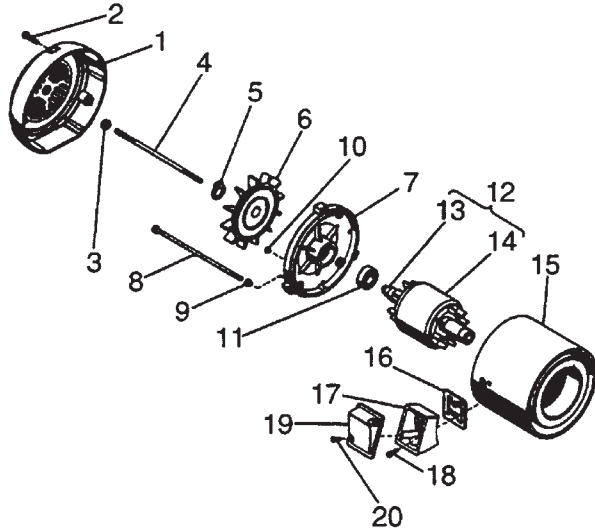
No.	Description of Part	All Reductions
1	Seal	1
2	Nuts	0
3	Studs	0
4	Housing	1
5	External Snap Ring	1
6	Bearing	1
7	Spacer	1
8	Bearing	1
9	Input Shaft	1
10	Internal Snap Ring	1
11	Pinion	1
12	Key	1
13	Backstop Kit (optional)	1
14	Spacer	1
15	Bolt	8
16	Bearing Seal	1
17	External Snap Ring	1

Gear Frame	Bearings		Seal (inches)
	6	8	1
36 & 37	NJ2210	22310	3.188 x 1.938 x .438 DL, nitrile
38	32213	32313	3.250 x 2.500 x .375, DL, nitrile

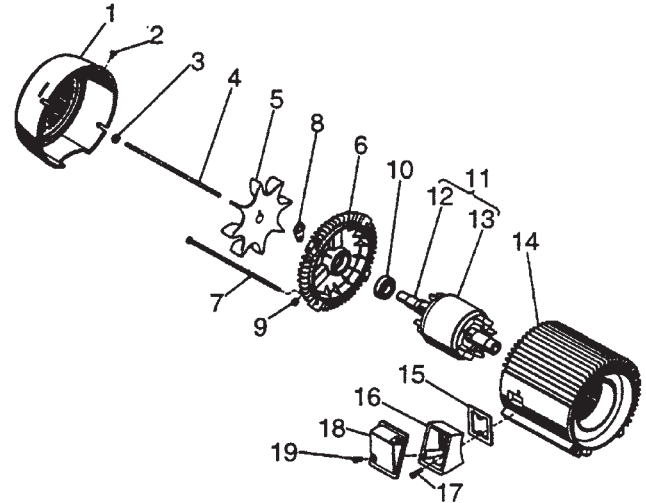


## TEFC Intergral "Modular Motor" Parts List

Frames 56, 140T



Frames 180T, 210T, 250T, A280T



Part #	Description	Qty.
1	Fan Cover	1
2	Self Tapping Screw	3
3	Hex Nut	1
4	Stud	1
5	Retaining Snap Ring	1
6	Fan	1
7	Bracket	1
8	Screw	4
9	Bushing	4
10	Plastic Plug	4
11	Ball Bearing	1
12	Rotor Assembly (includes items 13 & 14)	1
13	Shaft	1
14	Rotor Core	1
15	Wound Stator Assembly	1
16	Gasket	1
17	Outlet Box Base	1
18	Self Tapping Screw	2
19	Outlet Box Cover	1
20	Self Tapping Screw	2

Part #	Description	Qty.
1	Fan Cover	1
2	Self Tapping Screw	4
3	Hex Nut	1
4	Stud	1
5	Fan	1
6	Bracket	1
7	Hex Head Bolt	4
8	Lifting Lug	1
9	Hex Countersunk Pipe Plug	2
10	Ball Bearing	1
11	Rotor Assembly (includes items 12 & 13)	1
12	Shaft	1
13	Rotor Core	1
14	Wound Stator Assembly	1
15	Gasket	1
16	Outlet Box Base	1
17	Self Tapping Screw	2
18	Outlet Box Cover	1
19	Self Tapping Screw	2